

frogs, but never of toads. He had, however, observed them, and they are, in his opinion, decidedly more beneficial than otherwise. Mr. Schwarz said toads eat May-beetles, one toad examined having no less than eight *Lachnosternas* in its stomach. In the wilder parts of the Lake Superior region the best method of finding rare species is in the stomachs of toads. He had reason to believe that some of the harder weevils pass through the toads without being in any way injured thereby.

Mr. Schwarz then read the following note :

ON A COLLECTION OF COLEOPTERA FROM ST. AUGUSTINE, FLORIDA.

BY E. A. SCHWARZ.

Through the kindness of Dr. John Hamilton, of Pittsburg, Pa., I received lately a list of nearly six hundred species of Coleoptera, collected by the Rev. Charles Johnston in the vicinity of St. Augustine, Fla. The species have been named by Dr. Hamilton, and since he is known as a careful and experienced Coleopterist the determinations are no doubt reliable.

As I never collected in northern Florida, and since our knowledge of the Coleoptera of that part of the State is still very defective, the list is an important contribution to the knowledge of the fauna of Florida, and this the more so because an exact locality is given, whereas, in most other species coming from other sources, but presumably collected in northern Florida, no precise locality is given, the species being simply labeled or recorded from "Florida." Moreover, this list comprises such a large number of species—being defective only in the smaller and less conspicuous forms—that the character of the fauna of that locality may be fairly recognized therefrom. Finally, the collection is of special interest to me because it comes from a part of the coast not so very far remote from the line which, at a former occasion, I have designated as the northern limit of the semi-tropical fauna, and this collection is, therefore, able to prove or disprove the correctness of my statement. In scanning the list I find only five species which belong to the West Indian colony in Florida, viz., *Leptostylus terræcolor*, *Ischnocerus infuscatus*, *Artipus floridanus*, *Pachnæus opalus*, *Rhodobænus pustulosus*. The first named two belong to those species of the West Indian colony which have already acquired the power of changing their food-habits and to extend their geographical range northward. They are now quite common anywhere in the peninsula of Florida. The third species, *Artipus floridanus*, is unquestionably also an immigrant from the West Indies, but does not seem to have been previously described from that locality. It is by far the commonest beetle in semi-tropical Florida, and, economically, of great importance. Its injury to lime trees has already been referred to by Mr. William H. Ashmead in his work on Orange Insects, but I found its destructive powers much more

serious than told by Mr. Ashmead. It is a polyphagous species (at least in the imago state) and evidently spreading northward. As early as 1875 I found it commonly at Haulover Canal, feeding on leaves of oak and juniper, and in 1876 at New Smyrna. Both places being already north of the semi-tropical boundary line, the occurrence of the species at St. Augustine is not surprising. The fourth species, *Pachnæus opalus*, originally described from Cuba, is also very abundant in semi-tropical Florida, and Mr. Ashmead mentions it as being injurious to lime trees on the Florida Keys. I found it under the same conditions, though not nearly as destructive as the foregoing species. It occurs more commonly on the various fig trees, so characteristic of semi-tropical Florida, and most abundantly on all sorts of succulent weeds. In view of this diversity in food-habit it is not astonishing to see this species extend its range northward, but still, since I never found this weevil outside of semi-tropical Florida, I was quite surprised at seeing it on the St. Augustine list. The occurrence at St. Augustine of the fifth species, *Rhodobænus pustulosus*, is of great interest and quite new to me, since it was previously known only from southern Arizona and Mexico. It adds another instance to that curious geographical distribution to which I referred in my paper on the insect fauna of semi-tropical Florida, viz., the simultaneous occurrence of certain species in the extreme southwestern and southeastern parts of North America. Of the food-habits of this *Rhodobænus* I know nothing, but suspect from its general appearance that it belongs to the *Yucca* or *Opuntia* insects. At any rate it will be found also at other points of the Florida coast further south, and also in parts of Central America south of Mexico.

Of the five semi-tropical species on the St. Augustine list, the occurrence of three is in accordance with the previously known distribution, that of the fourth is not surprising, and only that of the fifth is a novel and interesting fact. Of the maritime semi-tropical fauna not a single species appears in the St. Augustine list. Thus, taking in account that the semi-tropical Coleopterous fauna of Florida amounts to several hundred species, it may safely be said that St. Augustine is well outside of the limits of this fauna.

Turning now to the bulk of the species in the list we find that they consist of the usual admixture of more or less widely-distributed species and true Floridian forms, the proportion being but little different from that of other localities, *e. g.*, Crescent City, Enterprise, Tampa. Among the true Floridian species on the St. Augustine list I am glad to see but few additions to the list published by me in 1878, including the manuscript additions since that time. I say I am glad thereof because it proves that our knowledge of the Florida fauna is already tolerably complete. But the St. Augustine list contains another element, viz., species belonging to the faunal region lying directly north of eastern Florida and comprising lower Georgia, the lower Carolinas, and eastern Virginia. This is an ill-defined region with very few, or no, peculiar species, and

only characterized by a certain combination of a number of southern species. The existence of this faunal region will become evident to any one who, on a summer day, goes from here down to Fortress Monroe, Va. The difference between the Washington fauna and that of Fortress Monroe will then be found quite striking. Of this fauna I noticed about twenty species in the St. Augustine list not previously known from Florida.

In conclusion, I would say that since the publication of my Florida list of Coleoptera I have carefully noted down in manuscript all additional species found afterwards in or recorded from Florida. These additions from all available sources swell the total of Coleoptera known to occur in Florida to about 2,400 species. A republication of this list is, however, not contemplated at present.

Mr. Smith made some remarks on *Lachnosterna*, indicating the result obtained by an examination of the genital structure of some of the more common species.

NOVEMBER 1, 1888.

Ten members present. President Schwarz in the chair.

The following paper was read by Mr. Schwarz :

ENTOMOLOGY IN GARCILASSO'S "CONQUEST OF FLORIDA."

By E. A. SCHWARZ.

Ynca Garcilasso de la Vega is not the oldest, but by far the fullest, of the three original historians of the famous expedition of Hernando de Soto through North America. The author is best known by his "History of Peru," his native country, and in this work he has paid a great deal of attention to natural history, and especially to zoölogy. Although he had never been himself in North America, I hoped to find in his account of De Soto's expedition at least some allusion to the insects of Florida,* and this the more so, since the author during the preparation of his work (completed, according to his own statement, in 1591, but not published before 1605) was able to get direct information from several survivors of the expedition. But I was disappointed; the book contains not the slightest allusion to insects, in fact, hardly any to zoölogy, and only a single passage which in any way is related to entomology. The only thought of the Spaniards being to find precious metals, they paid of course no attention to anything else, and least to the zoölogy of the countries they traversed. The book teems with lengthy narrations of many unimportant incidents

* It must be remembered that the Florida of Garcilasso's time comprised the whole of North America south of Canada and east of New Mexico.